THE INVENTION CLAIMED IS

1. A process for cutting sections from a probe for microscopic analysis, by using an ultramicrotome device having a blade with a cutting edge, the cutting edge in a non-vibrated position extending at least approximately in a first direction, the process comprising the steps of: vibrating the blade in the first direction; and moving the blade relative to the probe to be cut in a second direction, the second direction being perpendicular to the first direction.

2. The process according to claim 1, wherein the probe is cut in sections having a thickness of about 10 to about 100 nm.

3. The process according to claim 1, wherein the blade is vibrated with a maximum amplitude of the vibration of the blade of about 1 μm.

4. The process according to claim 1, wherein force is applied to a block of the ultramicrotome device, the block holding the blade.

5. The process according to claim 1, wherein the probe is vibrated in a third direction perpendicular to the first and the second direction.

6. The process according to claim 5, wherein the blade is vibrated in a first frequency and the probe is vibrated in a second frequency, the second frequency being twice the first frequency.

7. The process according to claim 1, wherein the probe is vibrated in a

third direction at least approximately parallel to the first direction.

8. The process according to claim 7, wherein the probe and the blade are vibrated, such that when the blade reaches its reversal points, the probe is still moving and vice versa.

9. The process according to claim 8, wherein the probe and the blade are vibrated at the same frequency, but in a different phase.

10. The process according to claim 7, wherein the blade is moved relative to the probe in the second direction with a substantially constant cutting speed over a distance larger than a cross-sectional dimension of the probe in the third direction.

11. The process according to claim 1, wherein in the third direction, an amplitude b_o of vibration is used with

$$b_o \geq v_c/2\omega,$$

wherein ω is the frequency in radians of the first vibrator and v_c is the cutting speed in the third direction.

12. The process according to claim 1, wherein in the first direction, an amplitude a_o of vibration is used with

$$a_o \geq 10\ v_c/\omega,$$

wherein ω is the frequency in radians of the first vibrator and v_c is the cutting speed in the third direction.

13. The process according to claim 1, wherein a diamond blade is used.

14. The process according to claim 1, wherein the blade is moved relative to the probe in the second direction with a substantially constant cutting speed.